METHOD AND APPARATUS FOR THE PRODUCTION OF ENERGY

Abstract of the Invention

The present invention provides processes and apparatuses for safely, rapidly, cost-effectively and efficiently producing a superheated steam product or dry saturated steam product that can be employed to generate electrical power in an environmentally clean manner without causing corrosion to turbines or similar electrical power-generating devices. These processes and apparatuses involve the combustion of one or more fuels containing the element hydrogen, the element carbon or the elements hydrogen and carbon, which can be derived from waste materials, such as the rubber from scrap tires, discarded carpet, used plastic milk, soda or water bottles, or Styrofoam coffee cups, in two or more combustion reactions, using an oxidizer that is not air. One or more of the combustion reactions are incomplete combustion reactions, and another combustion reaction is a complete combustion reaction. Water that circulates around one or more combustion chambers and/or areas, but that does not enter into the combustion chambers or areas, becomes converted into a high purity superheated steam product or dry saturated steam product containing superheated steam, dry saturated steam or both types of steam. A separate combustion gas exhaust product produced by the combustion reactions is generally environmentally clean, and may be discharged into the atmosphere. Alternatively, the combustion gas exhaust product may be used to produce a separate steam product that can be employed to produce electrical power or in other steam applications.

The present invention also provides processes and apparatuses for recycling or eliminating waste materials in a safe, rapid, cost-effective, efficient and environmentally clean manner, thereby increasing the lifespans of landfills.

The present invention further provides processes and apparatuses for transforming hazardous materials into non-hazardous materials in a safe and environmentally-clean manner.

The present invention still further provides fuels that can be employed in the processes and apparatuses of the invention (and in other processes and apparatuses), and methods for producing these fuels.